

What is claimed is:

1. A droplet discharging device for discharging minute amounts of droplets containing a microcapsule composed from a minute core and a wall covering said
5 core, comprising:
a tank for storing a solution containing the core material and shell material of said microcapsule; and
one or a plurality of oscillating bodies for applying vibrational energy to the core material within said tank and emulsifying said core material, and
10 promoting the micro-encapsulation with said shell material.
2. A droplet discharging device according to claim 1, wherein said tank is disposed in the vicinity of a droplet discharging hole, and said oscillating body assumes the process of microencapsulating said core material and the process of discharging droplets containing this microcapsule from said discharging hole.
- 15 3. A droplet discharging device according to claim 2, wherein said oscillating body generates a first vibrational energy of a first frequency corresponding to the particle size of said microcapsule to be formed, and a second vibrational energy of a second frequency lower than said first frequency for discharging droplets containing said microcapsule from said droplet
20 discharging hole.
4. A droplet discharging device according to claim 1, wherein said tank is disposed in the vicinity of a droplet discharging hole, one of said oscillating bodies generates a first vibrational energy with a first frequency corresponding to the particle size of said microcapsule to be formed, and one of the other said
25 oscillating bodies generates a second vibrational energy with a second frequency lower than said first frequency for discharging droplets containing said microcapsule from said droplet discharging hole.
5. A droplet discharging device according to any one of claims 1 to 4, wherein said oscillating body includes at least one among a piezoelectric material,

an oscillating body driven by electrostatic force, or a micromotor.

6. A droplet discharging device according to claim 3 or claim 4, wherein said first frequency is an ultrasonic frequency of an inaudible range.

7. A droplet discharging device according to claim 3 or claim 4, wherein the
5 droplets containing said microcapsule are not able to move along the liquid flow path from said tank to said droplet discharging hole with the first vibrational energy of said first frequency, and said droplets are able to move along said liquid flow path with the second vibrational energy of said second frequency.

8. A droplet discharging device according to claim 1, wherein cooling
10 means is provided to said oscillating body or said tank.

9. A droplet discharging device according to claim 1, wherein said tank is a compression chamber.

10. A droplet discharging device according to claim 2, wherein negative pressure adjustment means for setting the negative pressure within the tank is
15 provided to said tank, and said negative pressure is raised or lowered in said micro-encapsulation process and said discharging process.

11. A droplet discharging device for discharging minute amounts of droplets containing a microcapsule composed from a minute core and a shell covering said core, comprising:

20 a first tank for storing a solution containing the core material and shell material of said microcapsule;

means for applying emulsification energy to the core material within said tank and emulsifying said core material, and promoting the micro-encapsulation with said shell material;

25 a second tank for storing the solution containing said generated microcapsules; and

an oscillating body for discharging the solution stored in said second tank outside from a droplet discharging hole.

12. A manufacturing method of a microcapsule employing a droplet

discharging device comprising a compressing chamber capable of temporarily storing a solution, and an oscillating body for applying pressure to this solution and moving it outside from said compression chamber, comprising:

5 a solution storing step for storing in said compression chamber a solution containing a core material to become the core of said microcapsule, a shell material to become the shell, and a solvent;

10 a micro-encapsulation step for promoting the micronization of the core material within said compression chamber by generating in said oscillating body a vibrational energy of a frequency higher than the oscillation frequency for moving said solution outside, and generating a microcapsule in which said core material is encapsulated with said shell material; and

15 a discharging step for generating in said oscillating body a vibrational energy of the oscillation frequency for discharging said solution outside, and discharging the solution containing said microcapsule outside from said compression chamber.

13. A manufacturing method of a microcapsule according to claim 11 or claim 12, wherein the particle size of said microcapsule is set by adjusting the frequency and vibrational energy of said oscillating body.

20 14. A manufacturing method of a microcapsule employing a droplet discharging device for discharging minute amounts of droplets containing a microcapsule composed from a minute core and a shell encapsulating said core, comprising:

a first step for storing in a first tank a solution containing a core material and shell material of said microcapsule;

25 a second step for applying emulsification energy to the core material within said first tank with emulsification energy application means and emulsifying said core material, and promoting the micro-encapsulation with said shell material;

a third step for storing in a second tank a solution containing said

generated microcapsule; and

a fourth step for pressurizing the solution stored in said second tank with an oscillating body and discharging said solution outside from a droplet discharging hole.

- 5 15. A manufacturing method of a microcapsule according to claim 14, wherein said emulsification energy application means employs an oscillating body, and the particle size of said microcapsule is set by adjusting the frequency and vibrational energy of said oscillating body.